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TESTIMONY OF

[REDACTED]  
DIRECTOR, OFFICE OF SOVIET ANALYSIS

TO THE

SENATE APPROPRIATIONS COMMITTEE  
DEFENSE SUBCOMMITTEE

"SOVIET AIR DEFENSE CAPABILITIES"  
28 October 1981

1. Mr. Chairman, I will summarize for the Subcommittee our assessment of current and future Soviet air-defenses. The principal findings are drawn from NIE 11-3/8, the annual National Intelligence Estimate on Soviet Strategic Programs. I will note any alternative views of intelligence agencies, but there are few disagreements within the Intelligence Community on major aspects of Soviet air defense capabilities.

2. Soviet forces for defense of the homeland include some 6,500 radars, VG-1 1,200 surface-to-air missile units, and some 2,500 fighters manned, controlled, and maintained by a half million people. In addition, tactical air defense units located in the USSR at the time of an attack would be available for air defense. As a result of a recent reorganization, command of both the tactical and homeland air defense forces is exercised from Military Districts. Control of the air battle, however, would be [REDACTED] STAT  
[REDACTED] through numerous interceptor aircraft ground control STAT  
intercept sites and surface-to-air missile units. In all, about six percent

of Soviet annual military expenditures--not counting research and development--are for strategic defense. This would amount to about \$10 billion annually if Soviet air defenses were acquired in the US.

3. I would like to point out that our conclusions about the overall effectiveness of Soviet air defenses are not based on the results of computer simulations of the air battle to calculate the attrition the Soviets could inflict on an attacking force. Rather, they are based on our assessments of Soviet capabilities to perform in sequence each of the essential air defense VG-2 functions depicted here--early warning, detection and tracking, control of intercepts, and target destruction.

-- On this basis, we conclude that present Soviet air defenses, assuming they were undegraded by a prior ballistic missile strike, would probably be effective against aerodynamic vehicles at medium and high altitudes; that is, they would probably be able to perform all essential air defense functions.

-- On this same basis, we conclude that despite their size, Soviet air defenses would currently be ineffective against low-altitude targets--that is, they would be unable to perform all essential air VG-3 defense functions--because of the deficiencies summarized on this vugraph.

-- This graphic depicts the gaps in coverage of Soviet air defense radars in detecting and tracking low altitude targets.

VG-4 -- This next vugraph shows the shrinking coverage of Soviet surface-to-air missiles at low altitudes.

VG-5            -- Of the 2,500 Soviet fighters, only the MIG-23 Flogger, shown here, and a retrofitted version of the MIG-25 Foxbat have any capability to intercept targets flying below them. Even so, their target detection and engagement ranges are limited.

4. The Soviets have a number of programs under way, however, to overcome some of these deficiencies:

VG-6            -- For warning, detection, and tracking, that is, for air surveillance, they are developing an Airborne Warning and Control System (AWACS) aircraft, shown in this photograph, which will be able to detect and track low-altitude targets, as well as control fighter interceptors. They are deploying a new multifunctional, ground based radar that can provide simultaneously data on the speed and azimuth, and probably the altitude, of targets.

VG-7            -- For command and control of intercepts, in addition to the AWACS, the Soviets are continuing to deploy advanced data systems. These systems are used to provide target information rapidly to ground controllers directing intercepts. Presently we believe ground controllers can direct fighter intercepts against only those targets being tracked by radars located adjacent to their ground control site. With the new data systems, a ground controller should be able to use tracking data from remotely located radars to vector fighters to their targets.

VG-8            -- For intercept and target destruction, the Soviets have begun to deploy a new version of the MIG-25 Foxbat--with lookdown/shootdown

capabilities. This fighter will have the capability to simultaneously detect, track, and engage more than one target flying below it at low altitude, despite the radar clutter caused by the terrain background. (The modified Foxbat can detect 20 targets, track 10 of those targets but fire missiles at only four of the ten simultaneously.) The Soviets are flight testing a new interceptor--shown here--from the Mikoyan design bureau and also a new Sukhoy-designed interceptor, both with a lookdown/shootdown capability. They are deploying the SA-10, a new surface-to-air missile with much improved capabilities compared to older SAMs, which also can engage more than one target simultaneously. The deployment pattern of the some 20 sites now operational suggests the Soviets are giving priority to defense of point targets rather than strengthening the barrier defenses along Soviet border areas.

VG-9

5. We estimate that the size of the Soviet force committed to traditional homeland air defense at the end of this decade will approximate that of current levels, but that it will be a more capable force. The number of fighter interceptors probably will remain at about 2,500, although the number with lookdown/shootdown capabilities will increase, probably to some 2,000. The SA-10 surface-to-air missile should be widely deployed by then at about 350 sites. The new Soviet AWACS aircraft should also be in service, although here our estimates differ significantly from last year's NIE and DIA's current projections. We estimate that, by 1990, some 15 to 20 of the new AWACS will be deployed, whereas DIA projects some 50 to 60 in the same time frame.

6. Other developments could affect Soviet air defense capabilities against penetrating bombers.

-- As part of a general reorganization of command elements, the Soviets are subordinating interceptors and surface-to-air missile defenses of both the strategic and tactical defense forces in the USSR to a single command and control authority. This will facilitate employment of strategic defense forces in theater operations and permit more efficient use of tactical forces in defense of the homeland.

-- We believe the Soviets also plan to move surface-to-air missiles from their permanent peacetime sites to locations in the field during a period of crisis prior to a nuclear conflict. Such relocation would make defense avoidance and suppression tactics by US bombers more difficult.

7. I have highlighted our assessment of the Soviet capability against bomber-size targets penetrating the USSR at low altitude. However, the capabilities of Soviet air defenses against in-flight Short Range Attack Missiles (SRAMs) and against planned US cruise missiles at low-altitude also are pertinent. We have assessed the likely performance of individual Soviet air defense systems against these weapons and conclude that:

-- Present Soviet air defense systems, and those under development, would have little or no capabilities against the SRAM in flight.

-- None of the Soviet systems on which we have evidence appears to have been designed to defend against small US cruise missiles. We believe the new Soviet SAMs and fighters shown on previous vignettes would have

only limited capabilities against targets the size of the US cruise missile. Moreover, they would probably not be deployed in sufficient numbers during the 1980s to cover all of the areas the Soviets would want to protect. Short range tactical air defense systems--infrared homing SAMs and antiaircraft guns--could engage a low-altitude cruise missile at short ranges to provide some defense; however, they would have to be deployed in great density and be supported by a massive control system.

8. In summary, when new low-altitude capable air defense systems are deployed in sizable numbers by the mid-1980s, penetration of Soviet air defenses by conventional bombers will be more difficult. However, the overall effectiveness of Soviet defenses throughout the 1980s will depend on operational factors which we are unable to assess with confidence. They include:

- The effectiveness of bomber penetration tactics (defense avoidance, ECM, and defense suppression attacks).

- The extent of the degradation of air defenses resulting from the large-scale ballistic missile attack likely to precede bomber penetration. A combined attack by penetrating cruise missiles and bombers armed with SRAMs would put far greater stress on Soviet planning for and operation of air defenses than an attack by one force alone. Taking these factors into account, our judgment is that the effectiveness of Soviet air defenses during the next 10 years will remain limited against such a combined attack. In view of this limitation:

-- We think it likely that the Soviets will deploy a forward defense--composed of AWACS and interceptors--several hundred kilometers from Soviet borders. US bomber self-defense systems could impact on the likely effectiveness of such defense.

-- Also, given the difficulty of defending against in-flight bombers, SRAMS, and cruise missiles, the Soviets would probably attempt to maximize destruction of US bombers at their take-off bases.

9. Looking to the 1990s, we will probably witness further Soviet progress in measures to improve the performance of their radars in an ECM environment, that is, in such functions as:

- signal processing,
- electronically scanned arrays,
- compensated scans,
- and radio frequency agility.

Nevertheless, surveillance and missile guidance radars will still be limited to line-of-sight regardless of their performance, which will result in some discontinuities in coverage of low-altitude targets. We expect trends toward greater automation of intercept operations and more reliance on airborne instead of ground control of fighters. Despite these trends, we doubt that the Soviets will succeed even in the 1990s in confidently solving all the air defense problems associated with likely future aerodynamic vehicles.